



**UNIVERSITI PUTRA MALAYSIA**

**DEVELOPMENT OF A  
TUITION CENTER INFORMATION SYSTEM**

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# **DEVELOPMENT OF A TUITION CENTER INFORMATION SYSTEM**

**By**

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**Thesis submitted in fulfillment of the Requirement for the  
Degree of Master of Science in the  
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Chai Kow Kim

## List of Figure

---

	<i>Page</i>
<b>Figure 3.1 The Prototyping Process</b>	<b>8</b>
<b>Figure 3.2 Level 0 DFD</b>	<b>11</b>
<b>Figure 3.3 Level 1 DFD of Process 2.0</b>	<b>11</b>
<b>Figure 3.4 Level 2 DFD of Process 2.2</b>	<b>12</b>
<b>Figure 3.5 Level 2 DFD of Process 2.3</b>	<b>12</b>
<b>Figure 3.6 Entities Relationship Diagram</b>	<b>13</b>
<b>Figure 3.7 Structure Chart for Advance Tuition Center</b>	<b>17</b>
<b>Information System</b>	<b>16</b>
<b>Figure 3.8 Main Component Design</b>	<b>19</b>
<b>Figure 4.1 Main Menu Interface</b>	<b>22</b>
<b>Figure 4.2 Timetable Module</b>	<b>22</b>
<b>Figure 4.3 Contact Module</b>	<b>23</b>
<b>Figure 4.4 Register Module</b>	<b>24</b>
<b>Figure 4.5 Incomplete Fill-In Register Form</b>	<b>25</b>
<b>Figure 4.6 Register Verification</b>	<b>26</b>
<b>Figure 4.7 Register Status</b>	<b>26</b>
<b>Figure 4.8 Admin Login Module</b>	<b>27</b>
<b>Figure 4.9 Admin Page</b>	<b>28</b>
<b>Figure 4.10 Student Profile Update Interface</b>	<b>28</b>
<b>Figure 4.11 Student Profile Update Module</b>	<b>29</b>
<b>Figure 4.12 Fee Payment Login</b>	<b>30</b>
<b>Figure 4.13 Fee Payment Update</b>	<b>30</b>
<b>Figure 4.14 Fee Payment Receipt</b>	<b>31</b>
<b>Figure 4.15 Student Login Module</b>	<b>32</b>
<b>Figure 4.16 Student Page</b>	<b>32</b>
<b>Figure 4.17 Personal Timetable</b>	<b>33</b>
<b>Figure 4.18 Personal Fee Payment Status Record</b>	<b>33</b>

## List of Table

---

	<i>Page</i>
<b>Table 3.1 Requirement Elicitation Questionnaire</b>	<b>9</b>
<b>Table 3.2 Table “name”</b>	<b>14</b>
<b>Table 3.3 Table “month”</b>	<b>15</b>
<b>Table 3.4 Table “payment”</b>	<b>15</b>
<b>Table 3.5 Table “price_list”</b>	<b>15</b>
<b>Table 3.6 Table “subject_list”</b>	<b>15</b>
<b>Table 3.7 Table “time_table”</b>	<b>16</b>
<b>Table 3.8 Table “payment_status”</b>	<b>16</b>
<b>Table 3.9 Table “subject”</b>	<b>16</b>

## **Abstract**

The purpose of the project is to develop a tuition center information system which is data collecting and data processing system built with Visual Basic 6.0 programming language with Microsoft's Access as a database. The main objective of developing this system is to help administrator in managing the unavoidable administrative tasks such as student registration, and fee collecting. Benefit to public is that they can register on-line, check for timetable and tuition fee. And benefit for existing student, they are able to look for personal timetable and fee payment status.



## **Abstrak**

Tujuan utama dalam projek ini adalah mereka sistem informasi pusat tuisyen center, dimana ianya berfungsi untuk mengumpul dan memproses maklumat pelajar. Sistem ini dibina dengan menggunakan aturcara Visual Basic 6.0 dan menggunakan Microsoft's Access sebagai database. Objektif utama sistem ini dibinakan ialah untuk membantu pentadbir dalam menguruskan kerja-kerja pentadbiran seperti pendaftaran pelajar baru dan penerimaan yuran. Faedah untuk pelajar dari tingkatan satu hingga tingkatan lima ianya membolehkan pendaftaran online, mengetahui masa tuisyen dan subjek yuran. Faedah untuk pelajar lama adalah ianya membolehkan mereka mengetahui masa tuisyen dan keadaan pembayaran yuran diri sendiri.

## **Table of Content**

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	<i>Page</i>
<b>ACKNOWLEDGEMENT</b>	<b>i</b>
<b>LIST OF FIGURE</b>	<b>ii</b>
<b>LIST OF TABLE</b>	<b>iii</b>
<b>ABSTRACT</b>	<b>iv</b>
<b>ABSTRAK</b>	<b>v</b>
<b>CHAPTER 1: INTRODUCTION</b>	
<b>1.1 Overview</b>	<b>1</b>
<b>1.2 Problem Statement</b>	<b>1</b>
<b>1.3 Problem Solving</b>	<b>2</b>
<b>1.4 Objective</b>	<b>2</b>
<b>1.5 Scope of Project</b>	<b>3</b>
<b>CHAPTER 2: LITERATURE REVIEW</b>	
<b>2.1 Introduction</b>	<b>4</b>
<b>2.2 Features of Microsoft Access 2000</b>	<b>4</b>
<b>2.3 Features of Visual Basic 6.0</b>	<b>5</b>
<b>2.4 Prototyping Design</b>	<b>6</b>
<b>CHAPTER 3: METHODOLOGY</b>	
<b>3.1 Overview of System Development</b>	<b>7</b>
<b>3.2 System Analysis</b>	<b>9</b>
<b>3.3 Analysis Modeling</b>	<b>10</b>
<b>3.3.1 Data Flow Diagram (DFD)</b>	<b>10</b>
<b>3.3.2 Entities Relationship Diagram (E-R D)</b>	<b>13</b>
<b>3.4 System Design</b>	<b>14</b>
<b>3.4.1 Data Design</b>	<b>14</b>
<b>3.4.2 Architecture Design</b>	<b>17</b>

3.4.3 Interface Design	18
3.4.4 Component Design	18
3.5 System Testing	19
 <b>CHAPTER 4: SYSTEM MODULES</b>	
4.1 Introduction	21
4.2 User Interface	21
4.2.1 Main Menu Interface	21
4.2.2 Timetable Module	21
4.2.3 Contact Module	23
4.2.4 Register Module	23
4.2.5 Register Verification and Status Module	25
4.2.6 Administrator Login Module	27
4.2.7 Student Login Module	31
4.2.8 Logout Module	31
 <b>CHAPTER 4: CONCLUSION</b>	34
<b>BIBLIOGRAPHY</b>	35

# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 Overview**

As we know, nowadays tuition center has been a popular place for primary and secondary students who wish to obtain good results in their examination. With the increasing of number of students enrolled to tuition center, an information system has been introduced to replace the traditional system, which are paper files and forms for keeping records. In this project, a general information system that fit for most tuition center is developed to help administrator to manage all data or information available in tuition center, meanwhile also ease for students on-line thru internet to check information of the tuition center at anytime, anywhere.

### **1.2 Problem Statement**

In order to develop information system that suit most of the tuition center, I had interview three units of medium size tuition center at Ipoh, Perak which is Waja, Success, and Long tuition center, I found that all of them are still using their own spreadsheets form for keeping records or data. Therefore, administrator may consume a lot of time to trace student's fee payment status, subject registration record and etc. Besides that, students will need to go to tuition center or call-in to ask for information about timetable, tuition fee, and others. When existing students need to check with administrator about their fee payment status or pay fees, administrator may take some time to trace back their last payment record and prepare receipt for student.

The traditional way of information system is mostly depends on paper and time consuming. In order to help administrator to monitor students' information and manage the tuition center smoothly and effectively this need to be change.

### **1.3 Problem Solving**

The information system presented in this thesis is an attempt to solve the above problems by using computerized web-based system approach. It has intentionally been limited to using paper and save time, administrator can publish latest news, timetable, and subject fee on the homepage. As we know in the past two years, Malaysia government have launched a campaign of “ Each Family One Computer”, I think most of student have personal computer at home, hence students are able to get such information thru internet at home easily.

### **1.4 Objective**

The objective of this project is to develop a common tuition center information system, which can be implemented by most tuition center. In this system there comprised features as state below: -

- Publish timetable, subject fee, and internal news on homepage for public visit.
- Allow student to contact lecturer or administrator thru E-mail.
- Registered students can check their tuition fee payment status, look for personal subject taken and test or assignment result.
- Students' personal information entry and record keeping for administration used.
- Tuition fee payment record and print receipt.
- Students' subject registration record.

### **1.5 Scope of Project**

In the project a web based application, namely tuition center information system is developed using Active Server Pages (ASP) web-based. Microsoft's Personal Web Server (PWS) or Internet Information Server (IIS) used to run ASP on Windows 98 or Windows 2000. The whole system can be divided into five sub-modules, there are student profile, student's subject registration, timetable, subject fee and tuition fee payment.

In this system, Microsoft's SQL is used to store all the data. Certain pages will require verification of user's identity to login before they can access the system.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

Software has become the key element in the revolution of computer based systems and products. Currently, most of the tuition center still using traditional way in keeping student record. The main reason is because the administrative doesn't have computer knowledge. The existing system they are using now used a lot of file for data keeping like student registration file, each subject consists a student name list, receipt book, and Individual student payment file.

In student registration file, they are used to record student's personal detail, subject register and register date. If there have one of the student register nine subject, therefore admin have to record their name in nine difference subject file in order for admin to trace the number of student registered in each subject. In fee collection method, when student pay their tuition fee at counter, admin have to issue receipt and record the fee collection into individual student payment file, this is because ease for admin to keep track on outstanding payment of all students.

In this way, admin was consuming a lot of time to do paper work, and find in student record. This situation will affect management efficiency.

#### **2.2 Features of Microsoft Access 2000**

Essentially, Access is a database management system (DBMS). Like other products in this category, Access stores and retrieves data, presents information, and automates repetitive tasks.

Microsoft Access 2000 brings the productivity of database management to the usability and consistency of Microsoft Windows or others Microsoft products. Because both Windows and Access are from Microsoft, the two products work very well together. Access 2000 runs on Windows 98 and Windows NT platform. So all the advantages of Windows are available in Access 2000. We can cut, copy and paste data from any Windows application to and from Access 2000.

Using OLE (Object Linking and Embedding) objects in Windows or ADO (ActiveX Data Object) in Visual Basic, we can extend Access into a true database-operating environment by integrating it with these products. With the new Internet extensions, we can create forms that interact with data directly from the World Wide Web and translate forms directly into data pages for corporate intranets that work directly with Internet browser.

The relational processing in Access 2000 fills many needs with its flexible architecture. It can be used as a stand-alone database management system, in a file-server configuration, or as a front-end client to products such as SQL server. In addition, Access 2000 features ODBC (Open Database Connectivity), which permits connection to many external formats, such as SQL server, Oracle, Sybase.

### **2.3 Features of Visual Basic 6.0**

Visual Basic 6.0 is a complete, integrated development environment. It includes a project-based file system, a menu creator that gives double-click access to event code; automated menu building, an integrated debugger, a runtime environment as well as access to outside features including plug-in components and the Windows API



(Application Programming Interface). In this Visual Basic 6.0 version, new language features have been added:

- i) New string function has been added
- ii) Visual Basic 6.0 improves object creation through Create Object function. User can specify an options machine name and create objectives on remote site.
- iii) Visual Basic 6.0 incorporate new project types known as File System Object (FSO). These objects include a set of methods that improve the way of handling and directories.

## **2.4 Prototyping Design**

A prototype is all or part of a system that like the system under consideration but does not have the complete functionality of the real system. Thus, a prototype may have the screens, reports and menus of the real system; but it does not really perform all the functions of the system.

Prototyping offers many of the same advantages in the design stages as it did the requirement analysis. A feasibility prototype allows us to find out in the design stage whether the system will solve the problem at hand. Thus, a prototype encourages us to communicate with each other and our customers to explore areas that are not well defined. Such explorations resolve many problems early in development and avoid the creation of many more during testing. (Shari. L. P, 1991)

## **CHAPTER 3**

### **METHODOLOGY**

#### **3.1 Overview of Systems Development**

Whatever their scope and objectives, new information systems are outgrowth of a process of organizational problem solving. A new information system is built as a solution to some type of problem or set of problems the organization perceives it is facing. Systems development is a structured kind of problem solving with distinct activities. These activities consist of systems analysis, systems design, programming, testing, conversion, and production and maintenance. The systems development activities usually take place in sequential order. But some of the activities may need to be repeated or some may be take place simultaneously depending on the approach to system building that is being used. Tuition center information system is developed based on prototyping model.

In prototyping consists of building an experimental system rapidly and inexpensively for end users to evaluate. By interacting with the prototype, users can get a better idea of their information requirements. Prototyping is more explicitly iterative than the conventional life cycle, and it actively promotes system design changes. Figure 3.1 shows a four steps model of the prototyping process, which consists of the following:-

**Step 1:** *Identify the user's basic requirements.*

The system designer works with the user only enough to capture his or her basic information needs.

**Step 2:** *Develop an initial prototype.*

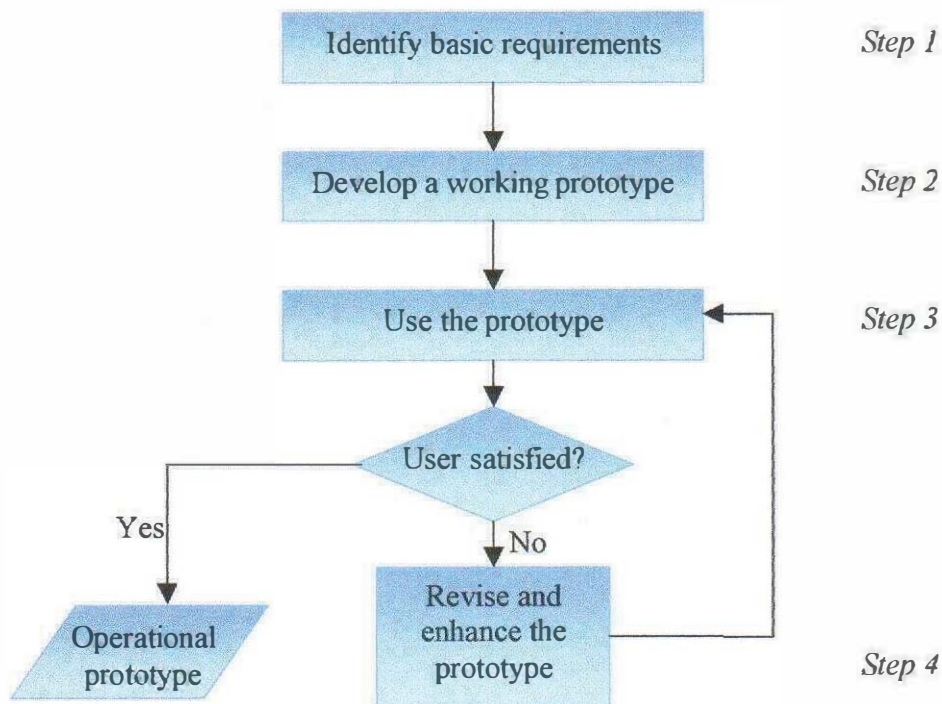
The system designer creates a working prototype quickly, using fourth-generation software, interactive multimedia or computer aided software engineering tools.

**Step 3:** *Use the prototype.*

The user work with the system in order to determine how well the prototype meets his or her needs and to make suggestions for improving the prototype.

**Step 4:** *Revise and enhance the prototype.*

The system builder notes all changes the user requests and refines the prototype accordingly. After the prototype has been revised, the cycle returns to step 3 until the user is satisfied.



**FIGURE 3.1** The prototyping process.

### 3.2 Systems Analysis

System analysis is the analysis of the problem that the organization will try to solve with an information system. It consists of defining the problem, identifying its causes, specifying the solution, and identifying the information requirements that must be met by a system solution.

Question	Answer
Who are the users?	Administrator, new/existing students
When is the software needed?	Payment record, registration and tuition center management.
Where will it be used?	Tuition center & anyway with internet access
What is the existing system?	Using a book to record data, and put the information like, time table or news on notice board in tuition center
How is the existing system work?	Quite slow, hard to trace student record, new student can't register online.
What is the existing hardware?	Nothing
Is there any existing/related software?	Nothing
If yes, what is the comment on it?	N/A
What is the input?	Login name and password
What is the expected output?	Student's particular, time table, assignment, result, course detail
What is the budget of the system?	Max. RM 2000.00
Who can access the database?	Administrator
Who maintain the database?	Administrator

**TABLE 3.1** Requirement elicitation questionnaire

The most difficult task of the system analyst is to define the specific information requirements that must be met by the system solution selected. The information requirements of a new system involve elicitation questionnaire to provide generic questions helping to collect the requirements from users, in Table 3.1 above consists of details questions and answer from users.

Some problems do not require an information system solution but instead need an adjustment in management, additional training, or refinement of existing organizational procedures.

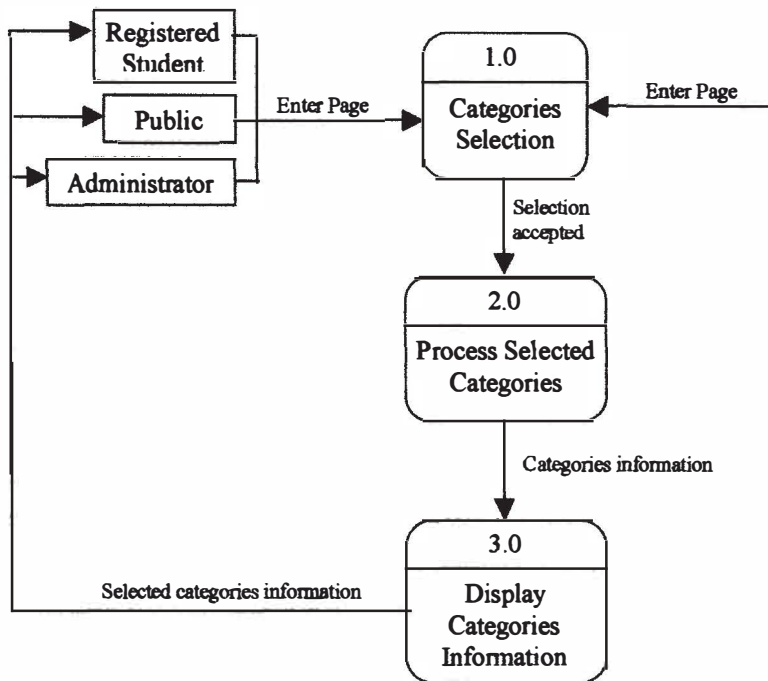
### **3.3 Analysis Modeling**

Analysis model is the first technical representation of a system and it must achieve three primary objectives:

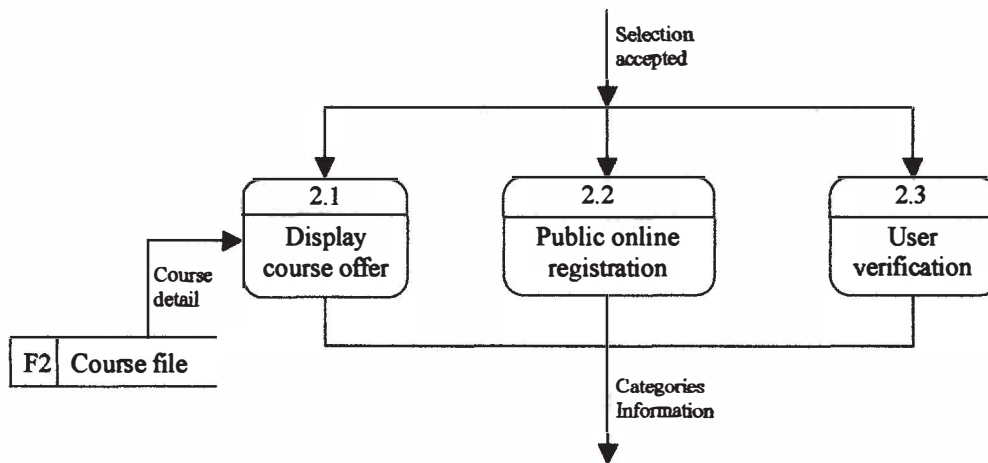
- i) To describe what the customer requires
- ii) To establish a basis for the creation of a software design
- iii) To define a set of requirements that can be validated once software is built.

#### **3.3.1 Data Flow Diagram (DFD)**

Data flow diagram is the primary tool in analysis that graphically illustrates the system's component processes and the flow of data between them. The DFD for common tuition center information system was illustrated in Figure 3.2 to Figure 3.5.



**FIGURE 3.2** Level 0 DFD



**FIGURE 3.3** Level 1 DFD of process 2.0

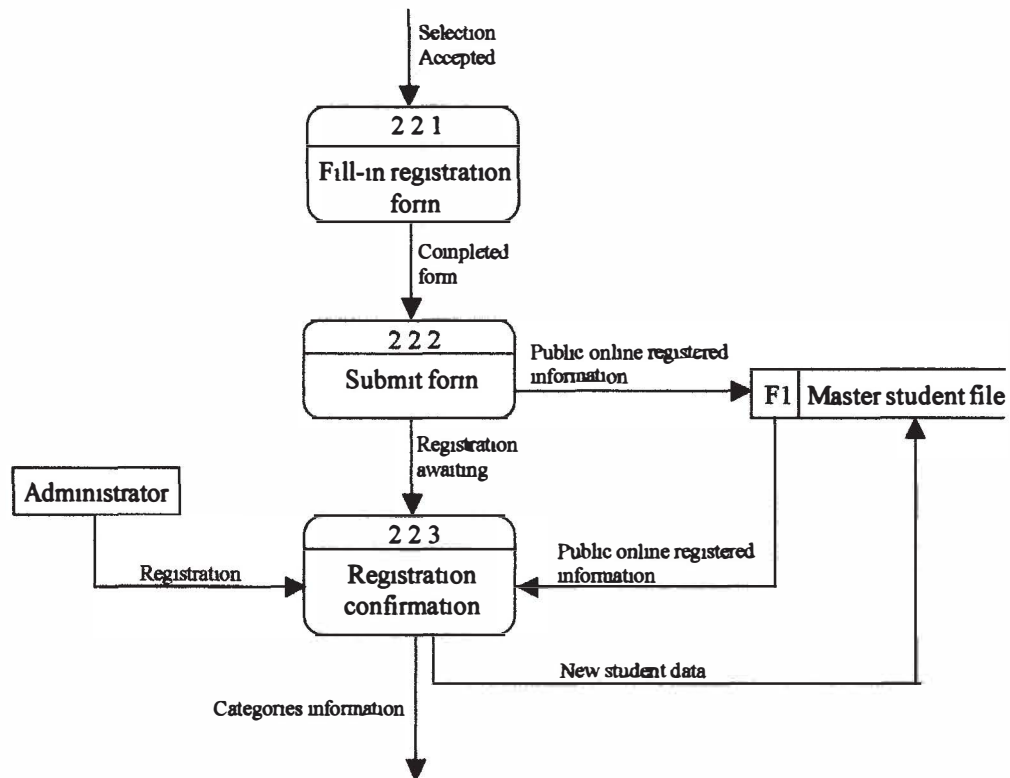


FIGURE 3.4 Level 2 DFD of process 2.2

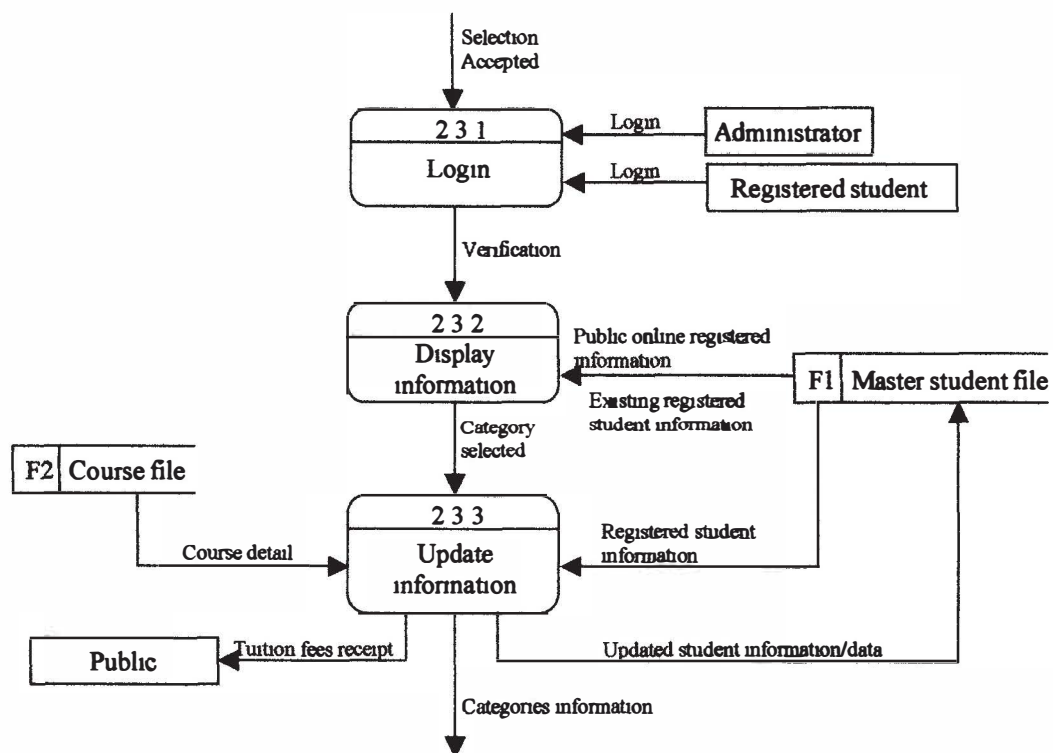


FIGURE 3.5 Level 2 DFD of process 2.3

### 3.3.2 Entities Relationship Diagram (E-R D)

Data models are tools used in analysis to describe the data requirements and assumptions in the system from a top-down perspective. They also set the stage for the design of databases later on in the SDLC. There are three basic elements in ER models:

- Entities* are the "things" about which we seek information.
- Attributes* are the data we collect about the entities.
- Relationships* provide the structure needed to draw information from multiple entities.

Generally, ERD's for the information system is look like Figure 3.6.

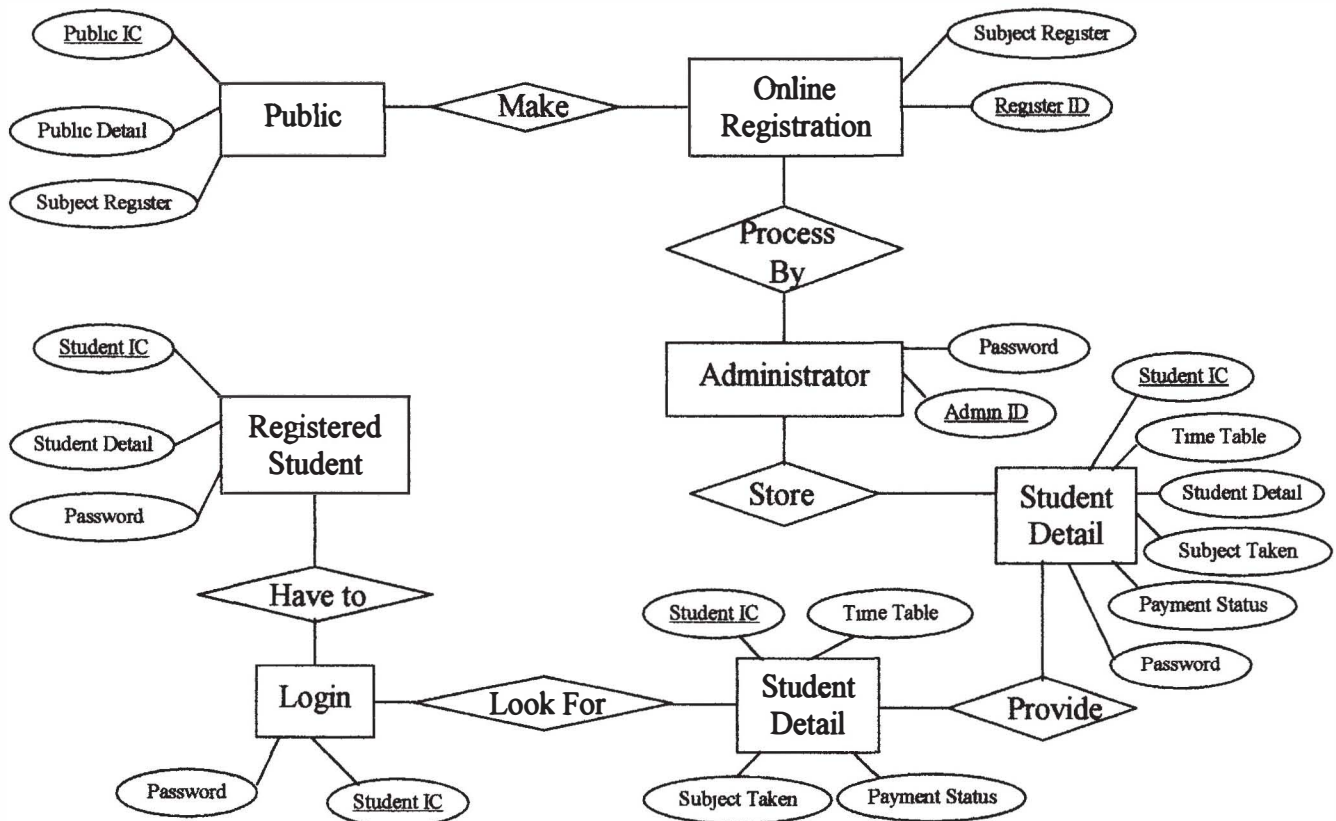


FIGURE 3.6 Entities Relationship Diagram



### 3.4 System Design

The objective of the system design is to transform the detailed, defined requirements into complete, detailed specifications for the system to guide the work of the development phase. The decisions made in this phase address, in detail, how the system will meet the defined functional, physical, interface, and data requirements. Design phase activities may be conducted in an iterative fashion, producing first a general system design that emphasizes the functional features of the system, then a more detailed system design that expands the general design by providing all the technical detail.

#### 3.4.1 Data Design

Data design transforms the information domain model into data structures. The data objects relationships are defined in the ERD, which will provide the basis for data design. In this system, I use relational model to represent the entities and their attributes. To transform the ERD into relational model, I have assigned some attributes to describe each entity.

Attribute	Design Type	Description
Name	Text (50)	Name
Password	Text (8)	Password
Date_of_Birth	Text (10)	Date of birth
IC	Text (12)	Identity No
Sex	Text (6)	Sex
Address	Text (50)	Address
House_Phone	Text (12)	House phone
Mobile_Phone	Text (12)	Mobile phone
Email	Text (50)	Email
School	Text (50)	School
Level	Text (3)	Level (SPM / PMR)
memberdate	Date/Time	Member register date

**TABLE 3.2** Table “name”